LONGITUDINAL STUDENT FLOW PATTERNS OF THE B.C. GRADE 12 CLASS OF 1987/88

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Executive Summary

This study summarizes students' patterns of participation in post-secondary education in their first five years after being in Grade 12 using, as a case example, the B.C. Grade 12 Class of 1987/88. The cohort's attendance in B.C.'s public post-secondary education system is tracked in each fall session from 1988 to 1992 .

Slightly over 43% of all Grade 12 students continued into post-secondary education in the B.C. system, and they chose a multitude of paths into and through that system. Only a few of those paths were followed by most students. Of 376 possible participation patterns, 5% were travelled by 64% of the cohort. Most either:

- entered, and stayed in, university or college right after high school; or
- they immediately entered college and then transferred elsewhere; or
- they went to college, but only after having left high school for at least half a year.

Purpose

This study provides the B.C. Council on Admissions and Transfer with baseline data on student participation and persistence in the B.C. post-secondary education system. The results show how many students are accessing post-secondary education, where they are accessing it, and when they begin transferring between colleges and universities. The results update, and expand upon, an earlier analysis completed for Council in 1991.

Methodology

A panel design was used encompassing all Grade 12 students enroled in a public or private secondary school in B.C. in 1987/88. Each student from this Cohort was tracked in each Fall session at every public post-secondary institution in B.C. This provided data on their patterns of post-secondary participation and persistence from 1988 to 1992. It included data on the geographic origins and destinations of students. The data used came from the B.C. Educational Records Linkage File (the Link File).

Participation and Persistence

In their first five years after being in Grade 12, 43% of the Class of '87/88 attended a B.C. public post-secondary education institution. Most Grade 12 students who continued their post-secondary education, did so directly and immediately after high school (about 31% of the Class). Of the immediate entrants, about one-fifth had continual, or persistent, enrolment to 1992. Attendance patterns for those who began their post-secondary education at a college/institute were more varied than for those who began at a university.

Geographic Influence on Attendance

University, college/institute participation rates were distributed by college catchment areas (aggregations of B.C. school districts). The highest university immediate participation and persistence rates were found for those students from the Metro Vancouver and Victoria region; for colleges/institutes, the highest rates were for students outside this region. Generally, lowest participation and persistence rates were found in students from Rural Colleges and Outside Urban Areas.

Table of Contents

Executive Summary i

Table of Contents iii

List of Figures v

List of Tables vi

Key Findings About the B.C. Grade 12 Class of 1987/88 1

Purpose 2

Background 3

Approach 5

Longitudinal Student Flow Patterns 7

Estimated Cohort Participation and Persistence Rates 11

a) Participation *11*
b) Persistence *12*

Geographic Differences 14

Summary Comparison of the Grade 12 Class of 1987/88 vs the Grade 12 Graduates of 1986 19

A Reconciliation of the Longitudinal and Cross-Sectional Flows 20

Limitations 21

Bibliography 23

Glossary of Terms 25

Appendix 1: B.C. Post Secondary Immediate Entrants' Attendance and Participation Rates by College Catchment Area 28

Appendix 2a: B.C. Community College/Provincial Institute Immediate Entrants' Attendance and Persistence Rates by College Catchment Area .29

Appendix 2b: B.C. University College Immediate Entrants' Attendance and Persistence Rates by College Catchment Area.....30

Appendix 2c: B.C. University Immediate Entrants' Attendance and Persistence Rates by College Catchment Area 31

Appendix 2d: B.C. Post-Secondary Immediate Entrants' Attendance and Persistence Rates by College Catchment Area 32

Appendix 3: B.C. Post-Secondary Attendance and Cumulative Participation Rates by College Catchment Area 33

List of Figures

Figure 1: Estimated Paths for the B.C. Grade 12 Class of 1987/88[1] Students Located in Fall Sessions[2]: 1988, 1989, 1990, 1991 and 1992.....9

Figure 2: Institution-Type Immediate and Cumulative Participation Rates by College Catchment Area, from Fall 1988 to Fall 1992.....14

Figure 3: Geographic Equity of University Participation and Persistence: The Grade 12 Class of 1987/88 17

Figure 4: Geographic Equity of College and University College Participation and Persistence: The Grade 12 Class of 1987/88.....18

List of Tables

Table 1: B.C. Grade 12 Students' Post-Secondary Education Participation and Persistence Rates by College Catchment Area Fall 1988 to Fall 1992 13

Key Findings About the B.C. Grade 12 Class of 1987/88

- At least 31% of the total 37,293 Grade 12 Class participated in post-secondary within one year of being in Grade 12; and within five years, 43% had participated.

- A multitude of paths through the post-secondary system were found to be taken by those who continued their educational training in the province. A total of 376 patterns were counted; however, only 5% (21 paths) were taken by the majority (64%) of students.

- The most common patterns in these 21 paths were:

  (a) immediate entry to university and continual attendance for four or five years; and

  (b) immediate entry to college and a variety of subsequent attendance patterns at colleges.

- The 21 most common paths *did not include* stopping-out.

- Students who attended university right away were typically the ones who also stayed in university. But this direct correlation between participation and persistence was not found for the regional colleges.

  (a) Grade 12 students from the Metro Vancouver and Victoria areas had the highest university immediate participation rates. The highest college immediate participation rates were achieved by students from regions outside of the Metro Vancouver and Victoria area.

  (b) Metro Vancouver and Victoria Grade 12 students had the highest post-secondary five-year persistence rates. The highest university five-year persistence rates were achieved by students from the Urban Colleges, Outside Metro Vancouver and Victoria.

Purpose

This report summarizes how students participate in post-secondary education over time. It is a case study of the participation patterns of all B.C. students who were in Grade 12 in 1987/88. It derives, from these, indicators of their post-secondary participation rates immediately after being in Grade 12. It also describes their cumulative participation and persistence rates in post-secondary education five years after being in Grade 12.

It also provides comparisons of participation rates by college catchment region, both in terms of the rates themselves and the specific kinds of institutions through which that participation occurs.

The analysis concludes with a brief comparison of findings about the Grade 12 students, with findings from the 1991 longitudinal study of Grade 12 graduates. Readers will note that this report is not simply an update of findings from the earlier study but a continuation of this longitudinal tracking of Grade 12 students' post-secondary education attendance.

This report supplements research work being done by the Ministry of Skills, Training and Labour, with assistance from SIRI, for the Council of Ministers of Education of Canada (CMEC).[1]

We welcome comments and questions. Please direct any you may have to: Jean Gomes (451-6852; jgomes@bcit.bc.ca) or Sophie Ducharme (451-6731; sducharme@bcit.bc.ca) at the SIRI offices; or, Janice Mansfield (356-9733) at MSTL.

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1 See SIRI, *CMEC Student Flows Demonstration Project -- Working Paper* (Victoria: MSTL, March 1995).

Background

In October 1990, the B.C. Council on Admissions and Transfer published a report on university articulation and degree completion. It used data from the B.C. Educational Records Linkage File (the Link File).[2]

The following spring, Council commissioned some further analyses of the issues raised by that earlier report. They wanted further details on student persistence and achievement at the B.C. universities. Specifically, the Council wanted to gauge the longitudinal impacts of student flows on the supply of university undergraduates.

Those analyses showed that:

- enrolments in B.C.'s system of post-secondary institutions grew in recent years;
- admissions, over the same time period, had not grown. Retention increased; access did not;[3]
- 23% participated in post-secondary education within three years of being in Grade 12; and
- patterns of participation were many and varied.

The current study examines the participation patterns for a specific group of 1987/88 B.C. Grade 12 students that result from such system conditions.[4] It updates the longitudinal analysis that was prepared in 1991 using a cohort of Grade 12 students rather than Grade 12 graduates.

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2 The Link File Phase 1.

3 The Link File Phase 3.

4 For a more thorough description of the evidence of these changing conditions, see the earlier two reports produced for Council on Transfer Effectiveness: SIRI, *Some Perspectives on Transfer Effectiveness in the B.C.*

Post-Secondary System, (Victoria: BCCAT, October 1994, draft); and, SIRI, *Some Answers to John Dennison's Twenty Questions* (Victoria: BCCAT, February 1995).

Approach

Longitudinal data available in the Link File were re-organized via File queries to yield a longitudinal panel.[5] The panel selected was limited to B.C. Grade 12 students enroled in the academic year of 1987/88. A longitudinal summary was created for each student's participation pattern in the B.C. public education system for each Fall session from 1988 to 1992. This summary includes the timing and sequencing of the student's post-secondary participation, and geographic origin (as measured by college catchment area of the secondary school).

The current study enhances previous analyses in the following ways:

- data from the Link File have been more thoroughly scrubbed, standardized, and reconciled;
- improved measures of post-secondary participation rates, and participation patterns have been developed;
- participation rates are calculated by institution type (university, university college, and community college/provincial institute) as well as the whole post-secondary education sector;
- post-secondary participation of all Grade 12 students are tracked, not only Grade 12 graduates (allowing for identification of those who do not graduate from Grade 12 after one year);

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5 A panel design, a type of longitudinal study, selects one group of people that is studied at each observation point (way point) over time. The advantage of the panel design is that it provides a way to gain a fuller view of changes or shifts in the group. For a fuller discussion of this design and other longitudinal studies, refer to Earl Babbie, *The Practice of Social Research, 6th ed.* (Belmont, California: Wadsworth Publishing Company, 1992), pp. 99-102.

- it identifies for analyses each of the potential and actual participation routes that members of this cohort chose;

- it provides a five-year view of participation (the last analysis provided only a four-year view); and

- it provides a graphical summary of flow patterns which, hopefully, makes it easier for readers to understand the plethora of participation routes that students choose, and the cumulative post-secondary participation rates which those participation routes yield. We have attempted to make the complex issue of longitudinal flows easier to see and digest.

Longitudinal Student Flow Patterns

There are many potential post-secondary participation patterns open to students in B.C. Many of these have been specifically promoted by system policies, such as articulation agreements that enable transfer credits between colleges and universities.

In the five years following Grade 12 attendance, the class of 1987/88 could have chosen a myriad of routes into and through the B.C. post-secondary system. This analysis considers, only, the flow routes open to the students in each Fall in terms of the types of institutions they could attend. It includes opportunities to 'stop-out' of the system and return in a later semester. The analysis ignores their opportunities to enrol in one type of program and transfer into some other type of program. As well, the analysis ignores their opportunities to participate in non-Fall sessions.

Students in the cohort who continued their education in the province, did so in 376 different ways. These included various combinations of attending (and not attending) Grade 12 over again, university, or college. Within this blur of flow paths, there are some discernible patterns. Among them:

- Half (51%) continued their education (post-secondary and Grade 12) some time between 1988 and 1992. Some returned to Grade 12, but most of the students (43% of the total cohort) entered a college or university. 2593 (7%) Grade 12 students continued in the secondary sector and never attended B.C. post-secondary level studies.

- Most who participated in post-secondary education did so right away. From the Grade 12 class of 1987/88, 11,514 (31%) students immediately entered a college or university. This represented 71% of all those who participated in B.C. post-secondary education at any time from 1988 and 1992.

- Colleges were the major destination point for those who delayed post-secondary entry.

- "Stop-outs" are students who enter the system, leave for a semester or more, then return. Between 1988 and 1992, 18% (2869 students) of all participants stopped-out.[6]

- The two most common flow paths were straight into university and uninterrupted attendance in each of the next four or five years. Of all participants, 19% took these two routes (see Figure 1).

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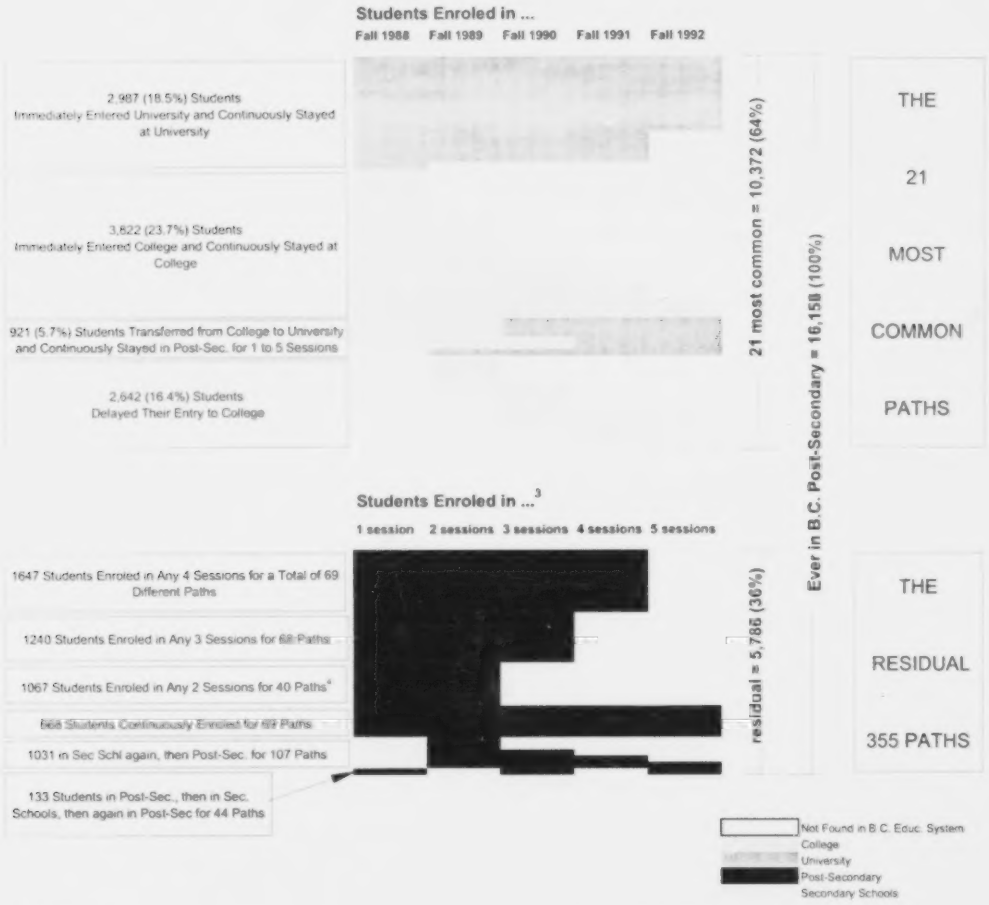
6 See discussion of stop-out rates in residual flow paths in SIRI, *CMEC Student Flows Demonstration Project -- Working Paper.*

Figure 1:
Estimated Paths for the B.C. Grade 12 Class of 1987/88[1]
Students Located in Fall Sessions[2]: 1988, 1989, 1990, 1991 and 1992


Students Enroled in ...
Fall 1988
Fall 1989
Fall 1990
Fall 1991
Fall 1992
2,987 (18.5%) Students Immediately Entered University and Continuously Stayed at University
3,822 (23.7%) Students Immediately Entered College and Continuously Stayed at College
921 (5.7%) Students Transferred from College to University and Continuously Stayed in Post-Sec. for 1 to 5 Sessions
2,642 (16.4%) Students Delayed Their Entry to College
21 most common = 10,372 (64%)
Ever in B.C. Post-Secondary = 16,158 (100%)
THE 21 MOST COMMON PATHS
Students Enroled in ...[3]
1 session
2 sessions
3 sessions
4 sessions
5 sessions
1647 Students Enroled in Any 4 Sessions for a Total of 69 Different Paths
1240 Students Enroled in Any 3 Sessions for 68 Paths
1067 Students Enroled in Any 2 Sessions for 40 Paths[4]
868 Students Continuously Enroled for 69 Paths
1031 in Sec Schl again, then Post-Sec. for 107 Paths
133 Students in Post-Sec., then in Sec. Schools, then again in Post-Sec for 44 Paths
residual = 5,786 (36%)
THE RESIDUAL 355 PATHS
Not Found in B.C. Educ. System
College
University
Post-Secondary
Secondary Schools

Footnotes:

[1] Cohort defined by Grade 12 students in academic year 1987/88 enroled in at least one provincial exam (TRAX system). N = 37,293.

[2] Academic and Career/Technical Fall sessions are based upon enrolment in a session that touches any period between September 1 to December 31. For 98% of those, the start month is September. Other program areas are based upon enrolments taken at October 31.

[3] Number of cumulative Fall sessions where student was found in the Post-Secondary system during the 5 years from 1988 to 1992.

[4] 4.5% had attempted 4 sessions in the Post-Secondary sector.

Source: SIRI, *CMEC Student Flows Demonstration Project - Working Paper.*

The next most common routes were immediate entrance to college, and variations of subsequent participation only at college(s). More students took these routes than went to university (24% of all participants). Some, no doubt, completed their college studies as a product of their participation (see Figure 1).

The 'traditional' concept of college transfer (ie immediately entering college, completing some studies, then transferring to university, all without interruption) included some of the most common paths chosen by students. Although they were amongst the most common paths chosen, only 6% of all participants took these routes.

The system, from these numbers, seems to be more of a system of destinations than a system of transfer nodes. While policies exist to enable credit transfer across sectors of the post-secondary system (and, thereby, student mobility), such inter-sector mobility is not obvious from the main paths chosen by students as they moved through the system.

Estimated Cohort Participation and Persistence Rates

These student flow patterns enable estimations of cohort participation and persistence rates. Here are those estimates for the Grade 12 Class of 1987/88:

a) Participation

- The cohort's *Immediate Post-Secondary Participation Rate* was 31% (see Table 1).
- The cohort's *Cumulative Five-Year Post-Secondary Participation Rate* was 43%.
- The cohort's *Immediate University Participation Rate* was 12% (see Appx. 1).
- The cohort's *Cumulative Five-Year University Participation Rate* was 19% (see Appx. 3).

As the techniques used for record linkage in the Link File improve, the estimates of post-secondary participation rates will rise. We expect those improvements to yield a 60-65% cumulative participation rate within five years of being in Grade 12. It is too early to know precisely how the patterns of post-secondary participation discovered in this study will be affected. We expect to find more college to university transfers, but still within highly varied participation patterns.

b) Persistence

- The cohort's *Five-Year Post-Secondary Persistence Rate* was 21% (see Table 1).
- The cohort's *Four-Year University Persistence Rate* was 63% (see Appx. 2c).
- The cohort's *Five-Year University Persistence Rate* was 42%.

Why is persistence so much lower five years after Grade 12? Some students have dropped out. Others have completed their studies. Others have earned their credential. It remains a limitation of Link File analyses of persistence (and retention) that the available data cannot yet control for these effects.[7]

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7 SIRI is currently conducting a feasibility study with the College Student Outcomes Working Group to determine if and how the available data could be standardized to resolve this problem.

Table 1:
B.C. Grade 12 Students' Post-Secondary Education Participation and Persistence Rates by College Catchment Area Fall 1988 to Fall 1992

A CAVEAT: Transition paths in this table underestimate actual participation. Incorporating probabilistic linkages will identify additional participants.

Number of Grade 12 Students[1] by College Catchment Area	N	Number Attended Post-Secondary ...in Fall 1988	Number Attended Post-Secondary ...in any Fall Session 1988 - 1992	Post-Secondary Participation Rates[3] ...in Fall 1988 %	Post-Secondary Participation Rates[3] ...in any Fall Session 1988 - 1992 %	Post-Secondary Persistence[3] Number Attended in all Fall Sessions 1988-1992	Post-Secondary Persistence[3] 5-Year Persistence Rate[4] %
Metro Vancouver and Victoria							
Camosun Region	3,265	750	1,149	23.0%	35.2%	222	29.6%
Capilano Region	2,302	967	1,312	42.0%	57.0%	221	22.9%
Douglas Region	4,402	1,335	2,006	30.3%	45.6%	366	27.4%
Kwantlen Region	6,324	2,020	2,978	31.9%	47.1%	421	20.8%
Vancouver Region	4,685	2,105	2,780	44.9%	59.3%	536	25.5%
Sub-Total	20,978	7,177	10,225	34.2%	48.7%	1,766	24.6%
Urban Colleges, Outside Metro Vancouver and Victoria							
Cariboo Region	2,085	665	915	31.9%	43.9%	94	14.1%
Fraser Valley Region	1,876	521	729	27.8%	38.9%	64	12.3%
Malaspina Region	2,104	544	778	25.9%	37.0%	83	15.3%
New Caledonia Region	1,776	593	814	33.4%	45.8%	52	8.8%
Okanagan Region	3,022	717	934	23.7%	30.9%	107	14.9%
Sub-Total	10,863	3,040	4,170	28.0%	38.4%	400	13.2%
Rural Colleges, Outside Urban Areas							
East Kootenay Region	915	224	303	24.5%	33.1%	25	11.2%
North Island Region	1,629	384	516	23.6%	31.7%	85	22.1%
Northern Lights Region	688	46	89	6.7%	12.9%	6	13.0%
Northwest Region	1,028	243	344	23.6%	33.5%	38	15.6%
Selkirk Region	927	373	471	40.2%	50.8%	37	9.9%
Sub-Total	5,187	1,270	1,723	24.5%	33.2%	191	15.0%
Total, All College Catchment Areas	37,028	11,487	16,118	31.0%	43.5%	2,357	20.5%
Catchment Area Unknown	265	27	40	10.2%	15.1%	7	25.9%
GRAND TOTAL, Grade 12 Students in 1987/88	37,293	11,514	16,158	30.9%	43.3%	2,364	20.5%

Notes: See Glossary of Terms. Also refer to Appendices for further breakdowns of data contained in this table.

Footnotes:

[1] B.C. Grade 12 students in the academic year 1987/88 who were enroled in at least one provincial high school exam (TRAX system).

[2] College Catchment Areas are aggregations of B.C. secondary school districts.

[3] Participation rate is calculated by the number of students who attended a post-secondary educational institution divided by the number of Grade 12 students (N).

[4] Persistance rate is calculated by the number of students who attended all Fall Sessions divided by the number who immediately attended in Fall 1988.

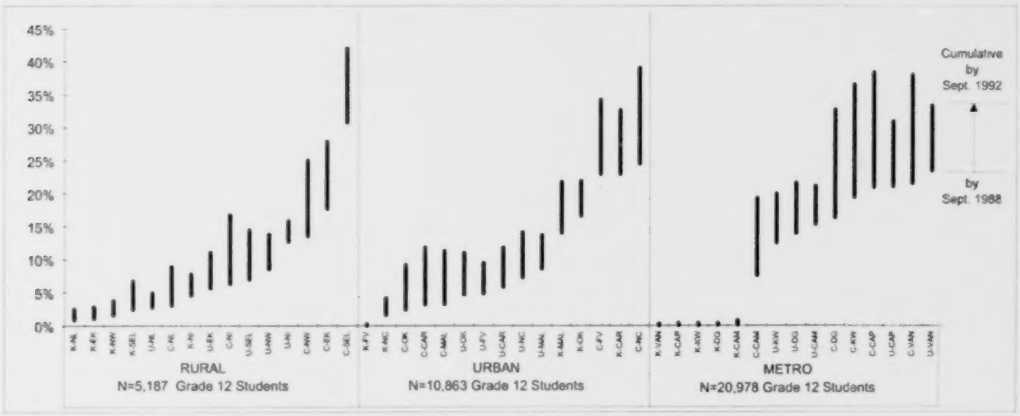
Source: Link File Phase 4

Geographic Differences

There are discernible differences in participation rates between college catchment areas. For some, delayed entry is more common than for others. For some, both immediate and cumulative participation rates are much higher than average (see Figure 2).

Figure 2:
Institution-Type Immediate and Cumulative Participation Rates by College Catchment Area, from Fall 1988 to Fall 1992

This graphic compares immediate participation to cumulative participation for each region, and institution type. The bars are sorted by immediate participation rates. For some college catchment regions, cumulative participation was considerably higher than immediate participation, indicating the relative importance of delayed entry into the post-secondary education institutions (universities, colleges/institutes, or university colleges). This is shown especially in delayed entries to colleges/institutes by Grade 12 students from the Metro Vancouver and Victoria region.



Note: In labeling the college catchment areas above, shown on the x-axis, a "K" indicates that the student attended a university college; "C" indicates community college/public institute; and "U" indicates a university.

Legend: Rural: EK (East Kootenay Region) NI (North Island Region), NL (Northern Lights Region), NW (Northwest Region),SEL (Selkirk Region).

Urban: CAR (Cariboo Region), FV (Fraser Valley Region), MAL (Malaspina Region), NC (New Caledonia Region), OK (Okanagan Region).

Metro CAM (Camosun Region), CAP (Capilano Region), DG (Douglas Region), KW (Kwantlen Region), VAN (Vancouver Region).

Source: Appendices 1,3.

There are also regional differences in the types of institutions through which students choose to participate (see Figure 2). Generally, the difference between cumulative participation and immediate participation was greatest for students entering the community colleges/institutes. This was especially the case with students from the Metro Vancouver and Victoria region.

Lastly, there are some further regional differences in patterns of participation and persistence. The university attendance pattern indicates that higher immediate participation tends to be associated with a higher persistence rate. There are exceptions. For example, students from the Okanagan Region with relatively low immediate participation, had the highest four-year persistence rate compared to students from other regions (see Figure 3).

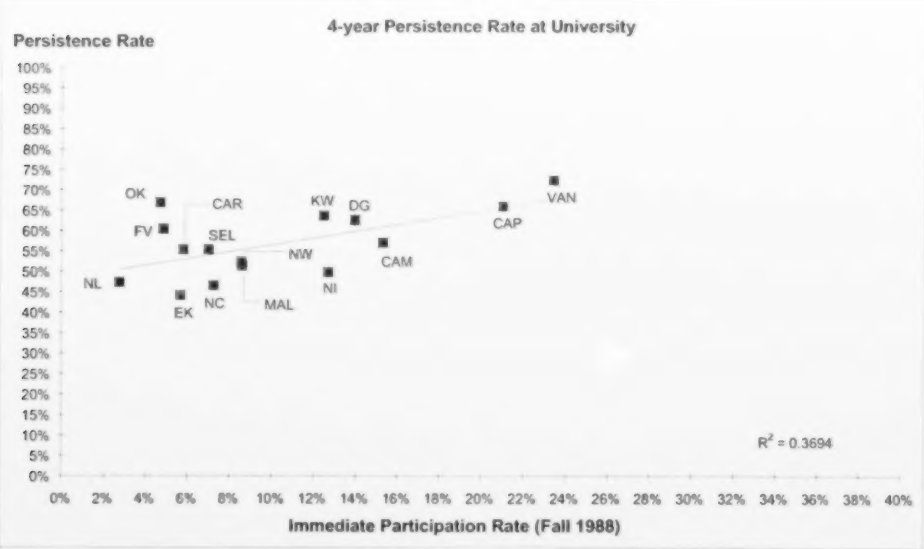
Much of the relationship between the high participation and high persistence in university for the urban areas, can probably be explained by geography and social network theory. Essentially, individuals who are able to attend a school close to where they have been living, benefit from additional social support networks. They would lose this support if they had to move away from home to continue their post-secondary education.

Grade 12 students from the Rural Colleges and Outside Urban Areas generally had the lowest immediate university participation rates, as well as four-year persistence rates (with the exception of students from the Selkirk region). Students from the Urban Colleges and Outside Metro Vancouver and Victoria region had relatively higher university college immediate participation rates (12%). Those from the Rural Colleges and Outside Urban Areas had higher community college/institutes immediate participation rates (14%) (see Appendix 1).

On the college side, the relationship between immediate participation rates and short term persistence rates appears to be slightly negative (see Figure 4). This, however, is likely attributed to the effects of non-academic programs which are included in these data. In such programs, some of the non-persistence being observed may be the product of program completions which, for now, remain undetected given limitations in the available data.

Figure 3:
Geographic Equity of University Participation and Persistence: The Grade 12 Class of 1987/88

This scatterplot shows the relationship between immediate participation and 4-year persistence (attendance in Fall Sessions: 1988, 1989, 1990 and 1991) at university. The university pattern indicates that for university attendance, higher immediate participation tends to be associated with a higher persistence rate. There are exceptions. For example, students from the Okanagan Region with relatively low immediate participation, had the highest 4-year persistence rate compared to students from other regions.



Legend: Rural: EK (East Kootenay Region) NI (North Island Region), NL (Northern Lights Region), NW (Northwest Region),SEL (Selkirk Region).

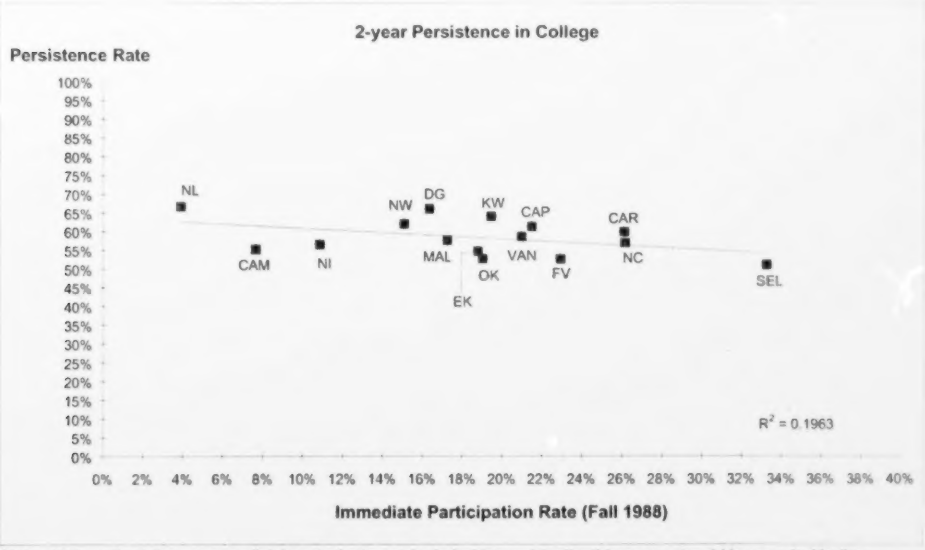
Urban: CAR (Cariboo Region), FV (Fraser Valley Region), MAL (Malaspina Region), NC (New Caledonia Region), OK (Okanagan Region).

Metro CAM (Camosun Region), CAP (Capilano Region), DG (Douglas Region), KW (Kwantlen Region), VAN (Vancouver Region).

Source: Appendices 1, 2A, 2B, 2C.

Figure 4:
Geographic Equity of College and University College Participation and Persistence: The Grade 12 Class of 1987/88

This scatterplot shows the relationship between immediate participation and 2-year persistence (attendance in Fall 1988 and Fall 1989) at college. College total includes the university colleges. Program type is not controlled (ie academic, career/technical, vocational, ABE, ESL are all included). On the college side, the participation-persistence relationship appears to be slightly negative. This, however, is likely attributed to the effects of short duration programs (ie vocational, ABE and ESL).



Note: University college upper-division students are included here. Ideally, this group should be counted in the university participation/persistence data but this breakdown cannot yet be made with the Link File data.

Legend: Rural: EK (East Kootenay Region), NI (North Island Region), NL (Northern Lights Region), NW (Northwest Region), SEL (Selkirk Region).
Urban: CAR (Cariboo Region), FV (Fraser Valley Region), MAL (Malaspina Region), NC (New Caledonia Region), OK (Okanagan Region).
Metro: CAM (Camosun Region), CAP (Capilano Region), DG (Douglas Region), KW (Kwantlen Region), VAN (Vancouver Region).

Source: Appendices 1, 2A, 2B, 2C.

Summary Comparison of the Grade 12 Class of 1987/88 vs the Grade 12 Graduates of 1986

The last longitudinal analysis of Link File data looked at the Grade 12 graduates of 1985/86. The current analysis examines the Grade 12 *students* of 1987/88 and therefore, includes in the paths, those students who returned to the B.C. secondary school system. These students either did not graduate from Grade 12, or returned to upgrade their Grade 12 credentials. The Grade 12 Class of 1987/88 had about a 76% high school graduation rate; about 8.4% returned to B.C. Grade 12 the following fall 1988.

Overall, university participation and persistence rates were comparable between the two cohorts. For instance, immediate entry rates to university was similar for both cohorts: 12% in Grade 12 students (class of 87/88), expectedly, slightly lower than the 14% in Grade 12 graduates (class of 1985/86). When analysed by region, students from Metro Vancouver and Victoria had the highest university immediate participation and persistence rates for both cohorts. Grade 12 students from Rural Colleges and Outside Urban Areas had relatively low participation rates. This was different for the Grade 12 graduates where those from the Urban Colleges, Outside Metro Vancouver and Victoria region had the lowest university immediate participation rates.

A Reconciliation of the Longitudinal and Cross-Sectional Flows

In previous analyses[8] Link File data have yielded cross-sectional estimates of participation rates. How do these estimates compare with the participation and persistence rates of this particular class of Grade 12 students?

Post-secondary immediate participation rates from the cross-sectional view are roughly comparable to the longitudinal view. When immediate flows of Grade 12 students moving into the post-secondary sector were measured, there was a steady rate of about 32% of Grade 12 students enroling in the post-secondary sector in each Fall session from 1989 to 1991 (with rise to 39% in Fall 1992). In the current longitudinal analysis, the immediate post-secondary participation rate was 31%.

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8 See the following reports prepared by SIRI: *Some Perspectives on Transfer Effectiveness in the B.C. Post-Secondary System* (Victoria: BCCAT, October 1994, draft); *Student Flows Into and Within B.C.'s Post-Secondary System: 1988-92* (Victoria: MSTL, June 1994).; *A Compilation of Responses to John Dennison's 20 Questions* (Victoria: BCCAT, February, 1995).

Limitations

The results of this analysis, SIRI believes, under-estimate both the post-secondary participation and persistence rates of this cohort of students. The exact extent of such under-estimation is unknown. What we do know is that immediate participation rates are no more than 10% higher than estimated in this report. What we do not yet know is how much more imprecise our estimates of cumulative participation and persistence rates may be as year-to-year incomplete linkages compound their way through the database for a single cohort of students.

A second problem is the weakness of the existing definition of Fall sessions. SIRI believes that with further tuning the numbers of Fall attendees will become more precise. The potential effects of improving precision in definitions of Fall on the participation and persistence rates reported in this study is also unknown.

Lastly, the purpose in creating a summary view of longitudinal flows is to provide a time-ordered sequencing of participation patterns. To do this, we would need to identify one enrolment at one way point at one point in time. This view would be "contaminated" by occurrences of multiple concurrent enrolments.[9]

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[9] One solution would be to describe each enrolment as a count of total courses attempted. It would identify more than one enrolment at one point in time. It would also enable us to identify the main components of each student's participation at each point in time. And, it would provide a cleaner picture than ever before of the magnitude, and effects, of multiple concurrent enrolments in student flows. This would be the preferred way to handle this issue; however, it would require some new work to be done, including the creation of new analytic variables.

Alternatively, we can force fit a solution by developing a hierarchical treatment of multiple concurrent enrolments and recognize only the importance of each multiple concurrent enrolment (eg: recognize a non-dropped session over dropped, university over college, college over secondary school, academic over non-academic, etc.). This approach mirrors current treatments of the issue in other cohort analyses. It is the solution we chose for our current longitudinal studies.[10]

This analysis ignores the impacts of new enrolments in sessions other than Fall (ie Spring and Summer) on total student flows. These impacts remain unknown...especially where such students do not continue on into a subsequent Fall session. To track students into non-Fall sessions would require that a new analytic variable be created that is the equivalent of the current definition of Fall.

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10 There is no doubt that a detailed analysis of this issue is needed. It is, however, well beyond the scope of any of the current commissioned project work. It represents another unknown dimension of data quality...in this case the unknown impacts of multiple concurrent enrolments on specific observed flow patterns.

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Glossary of Terms

College Catchment Areas -- These are aggregations of school districts in B.C. Readers should refer to Data Definitions in *SIRI, "Student Flows Into and Within the B.C. Post-Secondary System"* for further details about school districts included in each catchment area. There are 15 college catchment areas which have been grouped into three larger areas in this report:

> Metro Vancouver and Victoria include: Camosun Region, Capilano Region, Douglas Region, Kwantlen Region, Vancouver Region
>
> Urban Colleges, Outside Metro Vancouver and Victoria include: Cariboo Region, Fraser Valley Region, Malaspina Region, New Caledonia Region, Okanagan Region, Rural Colleges,
>
> Rural Colleges, Outside Urban Areas include: East Kootenay Region, North Island Region, Northern Lights Region, Northwest Region, Selkirk Region

Delayed Entry – Students who enrol in the post-secondary sector after Fall 1988.

Fall Session -- Academic and Career/Technical Fall sessions are based upon enrolment in a session that touches any period from September 1 to December 31. Other program areas (Vocational and Adult Basic Education) are based on enrolment at October 31.

Grade 12 Class of 1987/88 -- The cohort in this report includes B.C. Grade 12 students in the academic year 1987/88 (September 1, 1987 to August 31, 1988) enroled in at least one provincial high school exam (as reported in TRAX system).

Immediate Flow -- Post-secondary attendance in the Fall 1988 session.

Community Colleges/Provincial Institutes -- Include the following institutions: Camosun, Capilano, Douglas, East Kootenay, Fraser Valley, Kwantlen, New Caledonia, North Island, Northern Lights, Northwest, Selkirk, Langara, Vancouver Community Colleges (King Edward, City Centre, and Continuing Education), B.C. Institute of Technology, Emily Carr, Open Learning Agency.

Participation Rate -- The proportion of students that attended the post-secondary education sector out of the total number of Grade 12 students.

Persistence Rate -- The proportion of post-secondary attendees who enroled for *x* number of subsequent Fall sessions. In this report, five-year persistence rates are reported as well as two-year persistence rates for colleges, and four-year persistence rates for universities. Calculation of this rate uses the number of immediate and direct post-secondary entrants (ie, into Fall 1988) as the denominator.

Post-Secondary Education Sector -- Includes B.C. public universities, colleges and institutes.

Stop-outs -- Students who attended the post-secondary education sector, were absent for at least one Fall session, and, were found in the post-secondary education sector in a subsequent Fall session. There are two limitations to this definition. Since the last session tracked is Fall 1992, it is possible that some students, identified as exitors, re-enter after Fall 1992 and therefore, become stop-outs. As well, students who stopped-out over non-Fall sessions will not be identified as stop-outs in this analysis.

Universities -- Include the University of British Columbia, Simon Fraser University, and the University of Victoria.

University Colleges -- Include University College of the Cariboo, Malaspina University College and Okanagan University College. For the period under study, Fraser Valley University College and Kwantlen University College have been categorized under Community Colleges/Provincial Institutes.

Appendix 1:
B.C. Post Secondary Immediate Entrants' Attendance and Participation Rates by College Catchment Area

This table shows the numbers of B.C. 1987/88 Grade 12 students who immediately entered a non-university college, a university college or a university in Fall 1988. Immediate participation rates for each institution type and for the post-secondary system are also shown. Overall about 31% of the Grade 12 cohort immediately attended a post-secondary institution. The other 69% either delayed entry, or were not found in the B.C. post-secondary system from Fall 1988 to Fall 1992.

A CAVEAT: Transition paths in this table underestimate actual participation. Incorporating probabilistic linkages will identify additional participants.

		Grade 12 Students[1] Who Immediately Entered in Fall 1988, Into ...							
		a Community College/ Provincial Institute		a University College		a University		any Post-Secondary Institution	
Grade 12 Students by College Catchment Area[2]	N	Number Attended	Participation Rate[3] (%)	Number Attended	Participation Rate[3] (%)	Number Attended	Participation Rate[3] (%)	Number Attended	Participation Rate[3] (%)
Metro Vancouver and Victoria									
Camosun Region	3,265	247	7.6%	3	0.1%	500	15.3%	750	23.0%
Capilano Region	2,302	482	20.9%	1	0.0%	484	21.0%	967	42.0%
Douglas Region	4,402	717	16.3%	3	0.1%	615	14.0%	1,335	30.3%
Kwantlen Region	6,324	1,227	19.4%	3	0.0%	790	12.5%	2,020	31.9%
Vancouver Region	4,685	1,007	21.5%	0	0.0%	1,098	23.4%	2,105	44.9%
Sub-Total	*20,978*	*3,680*	*17.5%*	*10*	*0.0%*	*3,487*	*16.6%*	*7,177*	*34.2%*
Urban Colleges, Outside Metro Vancouver and Victoria									
Cariboo Region	2,085	66	3.2%	478	22.9%	121	5.8%	665	31.9%
Fraser Valley Region	1,876	430	22.9%	0	0.0%	91	4.9%	521	27.8%
Malaspina Region	2,104	68	3.2%	295	14.0%	181	8.6%	544	25.9%
New Caledonia Region	1,776	435	24.5%	29	1.6%	129	7.3%	593	33.4%
Okanagan Region	3,022	74	2.4%	501	16.6%	142	4.7%	717	23.7%
Sub-Total	*10,863*	*1,073*	*9.9%*	*1,303*	*12.0%*	*664*	*6.1%*	*3,040*	*28.0%*
Rural Colleges, Outside Urban Areas									
East Kootenay Region	915	162	17.7%	10	1.1%	52	5.7%	224	24.5%
North Island Region	1,629	103	6.3%	74	4.5%	207	12.7%	384	23.6%
Northern Lights Region	688	21	3.1%	6	0.9%	19	2.8%	46	6.7%
Northwest Region	1,028	139	13.5%	16	1.6%	88	8.6%	243	23.6%
Selkirk Region	927	285	30.7%	23	2.5%	65	7.0%	373	40.2%
Sub-Total	*5,187*	*710*	*13.7%*	*129*	*2.5%*	*431*	*8.3%*	*1,270*	*24.5%*
Total, All College Catchment Areas	**37,028**	**5,463**	**14.8%**	**1,442**	**3.9%**	**4,582**	**12.4%**	**11,487**	**31.0%**
Catchment Area Unknown	265	4	1.5%	1	0.4%	22	8.3%	27	10.2%
GRAND TOTAL, Grade 12 Students in 1987/88	**37,293**	**5,467**	**14.7%**	**1,443**	**3.9%**	**4,604**	**12.3%**	**11,514**	**30.9%**

Notes: See Glossary of Terms for more details.

Footnotes:

[1] B.C. Grade 12 students in the academic year 1987/88 enroled in at least one provincial exam (TRAX system).

[2] College Catchment Areas are aggregations of B.C. school distncts.

[3] Immediate participation rates are calculated by the number of Grade 12 students who attended post-secondary in Fall 1988 divided by the total Number of Grade 12 Students (N).

Source: Link File Phase 4.

Appendix 2a:
B.C. Community College/Provincial Institute Immediate Entrants' Attendance and Persistence Rates by College Catchment Area

This table shows the numbers of B.C. 1987/88 Grade 12 students who immediately entered a community college or provincial institute in Fall 1988. Two-year (Fall 1988 to Fall 1989) and five-year persistence rates are also shown. Students from Metro Vancouver and Victoria had the highest overall proportion of students who were persistors. Higher year persistence rates were also achieved by students from Malaspina, Okanagan, Northern Lights and Northwest areas.

A CAVEAT: Transition paths in this table underestimate actual participation. Incorporating probabilistic linkages will identify additional participants.

		Grade 12 Students[1] Who Immediately Entered a Community College/ Provincial Institute[2] in Fall 1988 and Continually Attended ...			
	Number of Grade 12	at least Fall 1988 and Fall 1989		all Fall Sessions	
College Catchment Area[3]	Students Who Immediately Entered in Fall 1988	Number Attended	2-year Persistence[4] Rate (%)	Number Attended	5-year Persistence[4] Rate (%)
Metro Vancouver and Victoria					
Camosun Region	247	137	55.5%	14	5.7%
Capilano Region	482	283	58.7%	27	5.6%
Douglas Region	717	474	66.1%	62	8.6%
Kwantlen Region	1,227	786	64.1%	88	7.2%
Vancouver Region	1,007	617	61.3%	63	6.3%
Sub-Total	*3,680*	*2,297*	*62.4%*	*254*	*6.9%*
Urban Colleges, Outside Metro Vancouver and Victoria					
Cariboo Region	66	36	54.5%	3	4.5%
Fraser Valley Region	430	226	52.6%	23	5.3%
Malaspina Region	68	41	60.3%	2	2.9%
New Caledonia Region	435	251	57.7%	8	1.8%
Okanagan Region	74	46	62.2%	2	2.7%
Sub-Total	*1,073*	*600*	*55.9%*	*38*	*3.5%*
Rural Colleges, Outside Urban Areas					
East Kootenay Region	162	89	54.9%	7	4.3%
North Island Region	103	56	54.4%	5	4.9%
Northern Lights Region	21	14	66.7%	1	4.8%
Northwest Region	139	89	64.0%	9	6.5%
Selkirk Region	285	144	50.5%	11	3.9%
Sub-Total	*710*	*392*	*55.2%*	*33*	*4.6%*
Total, All College Catchment Areas	**5,463**	**3,289**	**60.2%**	**325**	**5.9%**
Catchment Area Unknown	4	2	50.0%	0	0.0%
GRAND TOTAL, Grade 12 Students in 1987/88	**5,467**	**3,291**	**60.2%**	**325**	**5.9%**

Notes: See Glossary of Terms for more details.

Footnotes:

[1] B.C. Grade 12 students in the academic year 1987/88 who were enroled in at least one provincial exam (TRAX system).

[2] University Colleges are excluded. See Glossary.

[3] College Catchment Areas are aggregations of B.C. secondary school districts.

[4] Persistence rates are calculated by the number of attendees who maintained continuous Fall enrolments divided by the Number of Grade 12 Students Who Immediately Entered.

Source: Link File Phase 4.

Appendix 2b:
B.C. University College Immediate Entrants' Attendance and Persistence Rates by College Catchment Area

This table shows the numbers of B.C. 1987/88 Grade 12 students who immediately entered a university college in Fall 1988. Two-year and five-year persistence rates are also shown. Overall, students from the Rural Colleges and Outside Urban Areas had the highest proportion of persistors. Students from the Cariboo Catchment Area also had high persistence rates.

A CAVEAT: Transition paths in this table underestimate actual participation. Incorporating probabilistic linkages will identify additional participants.

College Catchment Area[2]	Number of Grade 12 Students Who Immediately Entered in Fall 1988	Grade 12 Students[1] Who Immediately Entered a University College in Fall 1988 and Continually Attended for ... at least Fall 1988 and Fall 1989 Number Attended	2-year Persistence Rate[3] (%)	all Fall Sessions Number Attended	5-year Persistence Rate[3] (%)
Metro Vancouver and Victoria					
Camosun Region	3	1	33.3%	0	0.0%
Capilano Region	1	0	0.0%	0	0.0%
Douglas Region	3	1	33.3%	0	0.0%
Kwantlen Region	3	1	33.3%	0	0.0%
Vancouver Region	0	0	-	0	-
Sub-Total	*10*	*3*	*30.0%*	*0*	*0.0%*
Urban Colleges, Outside Metro Vancouver and Victoria					
Cariboo Region	478	289	60.5%	45	9.4%
Fraser Valley Region	0	0	-	0	-
Malaspina Region	295	168	56.9%	20	6.8%
New Caledonia Region	29	13	44.8%	1	3.4%
Okanagan Region	501	257	51.3%	44	8.8%
Sub-Total	*1,303*	*727*	*55.8%*	*110*	*8.4%*
Rural Colleges, Outside Urban Areas					
East Kootenay Region	10	5	50.0%	0	0.0%
North Island Region	74	44	59.5%	1	1.4%
Northern Lights Region	6	4	66.7%	1	16.7%
Northwest Region	16	7	43.8%	0	0.0%
Selkirk Region	23	13	56.5%	1	4.3%
Sub-Total	*129*	*73*	*56.6%*	*3*	*2.3%*
Total, All College Catchment Areas	**1,442**	**803**	**55.7%**	**113**	**7.8%**
Catchment Area Unknown	1	0	0.0%	0	0.0%
GRAND TOTAL, Grade 12 Students in 1987/88	**1,443**	**803**	**55.6%**	**113**	**7.8%**

Notes: See Glossary of Terms for more details.

Footnotes:

[1] B.C. Grade 12 students in the academic year 1987/88 enroled in at least one provincial exam (TRAX system).

[2] College Catchment Areas are aggregations of B.C. school districts.

[3] Persistence rates are calculated by the number of attendees who maintained continuous Fall enrolment divided by the Number of Grade 12 Students Who Immediately Entered.

Source: Link File Phase 4.

Appendix 2c:
B.C. University Immediate Entrants' Attendance and Persistence Rates by College Catchment Area

This table shows the numbers of B.C. 1987/88 Grade 12 students who immediately entered a university in Fall 1988. Four-year and five-year persistence rates are also shown. Overall, about 63% of those who immediately entered and persisted for four Fall sessions. And by Fall 1992, 42% were still enroled in a university. Total persistence rates were highest for students from Metro Vancouver and Victoria. Students from the Fraser Valley and the Okanagan Catchment Areas also had higher than average persistence rates.

A CAVEAT: Transition paths in this table underestimate actual participation. Incorporating probabilistic linkages will identify additional participants.

		Grade 12 Students[1] Who Immediately Entered a University in Fall 1988 and Continually Attended ...			
	Number of Grade 12	at least Fall 1988 to Fall 1991		all Fall Sessions	
College Catchment Area[2]	Students Who Immediately Entered in Fall 1988	Number Attended	4-year Persistence Rate[3] (%)	Number Attended	5-year Persistence Rate[3] (%)
Metro Vancouver and Victoria					
Camosun Region	500	285	57.0%	208	41.6%
Capilano Region	484	319	65.9%	194	40.1%
Douglas Region	615	385	62.6%	304	49.4%
Kwantlen Region	790	503	63.7%	333	42.2%
Vancouver Region	1,098	788	71.8%	473	43.1%
Sub-Total	*3,487*	*2,280*	*65.4%*	*1,512*	*43.4%*
Urban Colleges, Outside Metro Vancouver and Victoria					
Cariboo Region	121	67	55.4%	46	38.0%
Fraser Valley Region	91	55	60.4%	41	45.1%
Malaspina Region	181	93	51.4%	61	33.7%
New Caledonia Region	129	60	46.5%	43	33.3%
Okanagan Region	142	95	66.9%	61	43.0%
Sub-Total	*664*	*370*	*55.7%*	*252*	*38.0%*
Rural Colleges, Outside Urban Areas					
East Kootenay Region	52	23	44.2%	18	34.6%
North Island Region	207	103	49.8%	79	38.2%
Northern Lights Region	19	9	47.4%	4	21.1%
Northwest Region	88	46	52.3%	29	33.0%
Selkirk Region	65	36	55.4%	25	38.5%
Sub-Total	*431*	*217*	*50.3%*	*155*	*36.0%*
Total, All College Catchment Areas	**4,582**	**2,867**	**62.6%**	**1,919**	**41.9%**
Catchment Area Unknown	22	9	40.9%	7	31.8%
GRAND TOTAL, Grade 12 Students in 1987/88	***4,604***	***2,876***	***62.5%***	***1,926***	***41.8%***

Notes: See Glossary of Terms for more details.

Footnotes:

[1] B.C. Grade 12 students in the academic year 1987/88 enroled in at least one provincial exam (TRAX system).

[2] College Catchment Areas are aggregations of B.C. school districts. See Glossary.

[3] Persistence rates are calculated by the number of attendees who maintained continuous Fall enrolment divided by the Number of Grade 12 Students Who Immediately Entered.

Source: Link File Phase 4.

Appendix 2d:
B.C. Post-Secondary Immediate Entrants' Attendance and Persistence Rates by College Catchment Area

This table shows the numbers of B.C. 1987/88 Grade 12 students who immediately entered the B.C. post-secondary sector in Fall 1988. A five-year persistence rate is also shown. Overall, 21% of those who immediate entrants persisted to Fall 1992. Total post-secondary persistence was highest for students from Metro Vancouver and Victoria.

A CAVEAT: Transition paths in this table underestimate actual participation. Incorporating probabilistic linkages will identify additional participants.

		Grade 12 Students Who Immediately Entered in Fall 1988, and Continually Attended ...	
		all Fall Sessions	
College Catchment Area[2]	Number of Grade 12 Students Who Immediately Entered in Fall 1988	Number Attended	5-year Persistence Rate[3] (%)
Metro Vancouver and Victoria			
Camosun Region	750	222	29.6%
Capilano Region	967	221	22.9%
Douglas Region	1,335	366	27.4%
Kwantlen Region	2,020	421	20.8%
Vancouver Region	2,105	536	25.5%
Sub-Total	*7,177*	*1,766*	*24.6%*
Urban Colleges, Outside Metro Vancouver and Victoria			
Cariboo Region	665	94	14.1%
Fraser Valley Region	521	64	12.3%
Malaspina Region	544	83	15.3%
New Caledonia Region	593	52	8.8%
Okanagan Region	717	107	14.9%
Sub-Total	*3,040*	*400*	*13.2%*
Rural Colleges, Outside Urban Areas			
East Kootenay Region	224	25	11.2%
North Island Region	384	85	22.1%
Northern Lights Region	46	6	13.0%
Northwest Region	243	38	15.6%
Selkirk Region	373	37	9.9%
Sub-Total	*1,270*	*191*	*15.0%*
Total, All College Catchment Areas	**11,487**	**2,357**	**20.5%**
Catchment Area Unknown	27	7	25.9%
GRAND TOTAL, Grade 12 Students in 1987/88	**11,514**	**2,364**	**20.5%**

Notes: See Glossary of Terms for more details.

Footnotes:
[1] B.C. Grade 12 students in the academic year 1987/88 enroled in at least one provincial exam (TRAX system).
[2] College Catchment Areas are aggregations of B.C. school districts. See Glossary.
[3] The five-year persistence rate is the percentage of Fall 1988 immediate entrants who attended each subsequent Fall session (1989, 1990, 1991 and 1992).

Source: Link File Phase 4.

Appendix 3:
B.C. Post-Secondary Attendance and Cumulative Participation Rates by College Catchment Area

This table shows the numbers of B.C. 1987/88 Grade 12 students who ever entered a community college/provincial institute, a university college or a university in any Fall Session from 1988 to 1992. Cumulative participation rates for each institution type and for the post-secondary system are also shown. Overall about 43% of the Grade 12 cohort ever attended a post-secondary institution. The other 57% were not found in the B.C. post-secondary system from Fall 1988 to Fall 1992.

A CAVEAT: Transition paths in this table underestimate actual participation. Incorporating probabilistic linkages will identify additional participants.

		Grade 12 Students[1] Who Attended Any Fall Session, in ...							
		a Community College/ Provincial Institute		a University College		a University		any Post-Secondary Institution	
Grade 12 Students by College Catchment Area[2]	N	Number Attended	Participation Rate[3] (%)	Number Attended	Participation Rate[3] (%)	Number Attended	Participation Rate[3] (%)	Number Attended	Participation Rate[3] (%)
Metro Vancouver and Victoria									
Camosun Region	3,265	629	19.3%	25	0.8%	688	21.1%	1,149	35.2%
Capilano Region	2,302	881	38.3%	8	0.3%	711	30.9%	1,312	57.0%
Douglas Region	4,402	1,438	32.7%	16	0.4%	951	21.6%	2,006	45.6%
Kwantlen Region	6,324	2,308	36.5%	23	0.4%	1,259	19.9%	2,978	47.1%
Vancouver Region	4,685	1,777	37.9%	12	0.3%	1,560	33.3%	2,780	59.3%
Sub-Total	*20,978*	*7,033*	*33.5%*	*84*	*0.4%*	*5,169*	*24.6%*	*10,225*	*48.7%*
Urban Colleges, Outside Metro Vancouver and Victoria									
Cariboo Region	2,085	245	11.8%	680	32.6%	246	11.8%	915	43.9%
Fraser Valley Region	1,876	641	34.2%	4	0.2%	177	9.4%	729	38.9%
Malaspina Region	2,104	237	11.3%	457	21.7%	288	13.7%	778	37.0%
New Caledonia Region	1,776	693	39.0%	74	4.2%	251	14.1%	814	45.8%
Okanagan Region	3,022	276	9.1%	662	21.9%	331	11.0%	934	30.9%
Sub-Total	*10,863*	*2,092*	*19.3%*	*1,877*	*17.3%*	*1,293*	*11.9%*	*4,170*	*38.4%*
Rural Colleges, Outside Urban Areas									
East Kootenay Region	915	255	27.9%	26	2.8%	101	11.0%	303	33.1%
North Island Region	1,629	272	16.7%	127	7.8%	258	15.8%	516	31.7%
Northern Lights Region	688	61	8.9%	17	2.5%	34	4.9%	89	12.9%
Northwest Region	1,028	257	25.0%	39	3.8%	142	13.8%	344	33.5%
Selkirk Region	927	389	42.0%	62	6.7%	134	14.5%	471	50.8%
Sub-Total	*5,187*	*1,234*	*23.8%*	*271*	*5.2%*	*669*	*12.9%*	*1,723*	*33.2%*
Total, All College Catchment Areas	**37,028**	**10,359**	**28.0%**	**2,232**	**6.0%**	**7,131**	**19.3%**	**16,118**	**43.5%**
Catchment Area Unknown	265	15	5.7%	3	1.1%	28	10.6%	40	15.1%
GRAND TOTAL, Grade 12 Students in 1987/88	**37,293**	**10,374**	**27.8%**	**2,235**	**6.0%**	**7,159**	**19.2%**	**16,158**	**43.3%**

Notes: See Glossary of Terms for more details.

Footnotes:
[1] B.C. Grade 12 students in the academic year 1987/88 enroled in at least one provincial exam (TRAX system).
[2] College Catchment Areas are aggregations of B.C. school districts. See Glossary.
[3] Participation rates are calculated by the number of Grade 12 students who ever attended a post-secondary educational institution divided by the total Number of Grade 12 Students (N).

Source: Link File Phase 4.